



DEPARTMENT OF CIVIL ENGINEERING  
**Indian Institute of Technology Madras**  
I.I.T.P.O., MADRAS-600 036

**Form for Inviting Quotations**

Ref. No. CE/STORES/2019/COORDINATED LIFTING MACHINES

Dt. 26.08-2019

**DUE DATE: 06.09.2019 – 4.00 P.M.**

To

Dear Sir,

1. Quotations are invited in duplicate for the various items shown below / overleaf / Enclosed list.
2. **The Quotations duly sealed and superscribed on the envelope with the reference No. and due date, should be addressed to the undersigned and contain in 2 bid system i.e. Technical bid and Commercial bid in two separate envelopes should be enclosed in a single envelope only so as to reach on or before the due date stipulated above.**
3. The Quotations should be valid for ninety days from the due date and the period of delivery required should also be clearly indicated.
4. If the item is under DGS&D Rate contract No. and the price must be mentioned. It may also please be indicated whether the supply can be made direct to us at the Rate contract price (Please note that we are not Direct Demanding Officers). If so please send a copy of the RC.
5. Relevant literature pertaining to the items quoted with full specifications (and drawing, if any) should be sent along with the Quotations, wherever applicable. Samples if called for, should be submitted free of charges, and collected back at the supplier's expenses.
6. Local Firms: Quotations should be for free delivery to this Institute. If Quotations for Ex-Godown delivery charges should be indicated separately.
7. Firms outside Chennai: Quotations should be for F.O.R. Madras. If F.O.R. consignor station, freight charges by passenger train / lorry transport must be indicated. If Ex-Godown, packing, forwarding and freight charges must be indicated.
8. The rates of GST and other taxes legally leviable and intended to be claimed should be distinctly shown along with the price quoted. Where this is not done, no claim for GST/General Taxes will be admitted at any stage and on any ground whatsoever. IIT Madras is eligible for concessional GST. Relevant certificate will be issued. In case of import supply the price should be quoted without custom duty. I.I.T. Madras is exempted from levy of IGST on Imports and eligible for concessional custom duty (not exceeding 5%) and the price should be quoted on **EX-WORXS** and **CIP** basis indicating the mode of shipment.
9. Goods should be supplied carriage paid and insured.
10. Goods shall not be supplied without an official supply order.
11. Payment: Every attempt will be made to make payment within 30 days from the date of receipt of bill / acceptance of goods, whichever is later.

Yours faithfully,

  
Dr. Benny Raphael

- Note: (i) Quotation should be sent by SPEED POST only or to be delivered directly to the concerned.  
(ii) Firms are requested to submit the specifications of their product along with supporting technical Documentation / brochure instead of reproducing the specifications sent by us.

# Specifications for Coordinated Lifting Machines

This document contains the specifications for the work involving supply, installation, commissioning and maintenance of 8 numbers of electrical lifting Actuator assemblies, to the Building Technology and Construction Management Division, Department of Civil Engineering, IIT Madras. The vendor should have at least two years experience in the supply and installation of such equipments. The vendor should have a registered office in Chennai where a competent representative should be able to answer queries related to the equipment.

## SUPPLY OF EQUIPMENT/ MATERIAL

The following equipments have to be supplied by the vendor to the site. The specifications of equipment/material required by the client are given below.

### Technical specifications

#### 1. Electrical lifting Actuator assemblies - 8 numbers

The purpose of the equipment is to lift in a coordinated manner, structural frames consisting of beams and columns made of steel pipe sections. The maximum height to be lifted is 500 mm, but this could be achieved in smaller steps. While the structure is partially lifted, the lifting axis should be locked to prevent unnecessary movement. The lifting system comprises of 8 numbers of actuator assemblies individually powered by servo electric drives with high torque ball screws. Each actuator assembly consists Ball screw mechanism, Planetary gear box, Synchronous Multi speed induction Motor, Load calibrated measuring gauge, VFD drive with integrated control system that is fully digitally controlled. Each Actuator can be used independently for any load lifting applications up to 0.8 ton. In addition, all the actuators could be operated in a coordinated manner for lifting large structural frames.

The lead screw need not be supplied and its price should not be included in the quote. The lifting base and the supporting frame are also out of the scope of the tender - existing frames should be used (Figure 1,2). However, couplers, plates to mount the motor, and all other accessories needed for the smooth functioning of the lifting system should be supplied. After the complete integration, tests should be conducted that demonstrates the full functioning of the lifting system with the specified load.

#### Actuators

Tonnage of Individual Actuator assemblies	0.85 tonne
Lift drive – Each Single axis :	630 mm
Maximum Lifting stroke	500 mm
Maximum lifting load	0.95 tonne
Power of individual drive	1 HP

*Benny Raphael*

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Mounting Interface	IEC - 112 B5
Control of linear Axis	PLC
Individual axis control	Available
Over-stroke safety control	Available
Over – load safety control	Available
Movement accuracy	5 mm
Braking for individual Axis with 400 percent Capacity	Available
Max : speed of operation with full load of 5 ton	175 mm / minute
Synchronization of movement	Available

#### Axis Overall Dimensions

Height	Approx. 800 mm
Dia	M25
Gear Ratio	1 : 55

#### PLC control System

1	Master PLC system	Yes
2	Data acquisition	yes
3	Operator panel with MMI	Yes
4	Individual Operation	Yes
5	Auto Synchronization	Yes
6	Auto lifting to programmed heights	Yes
7	Switches for Individual axis movements	Yes
8	Over all system safety	Yes

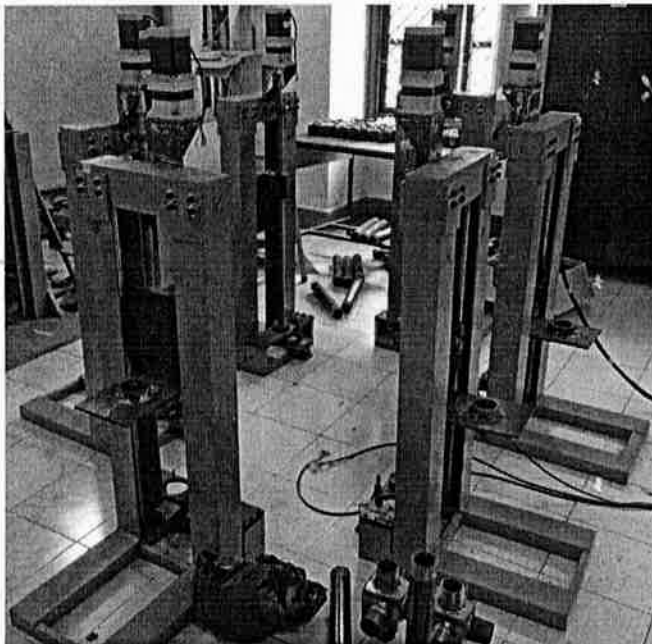


Figure 1: Lifting frames

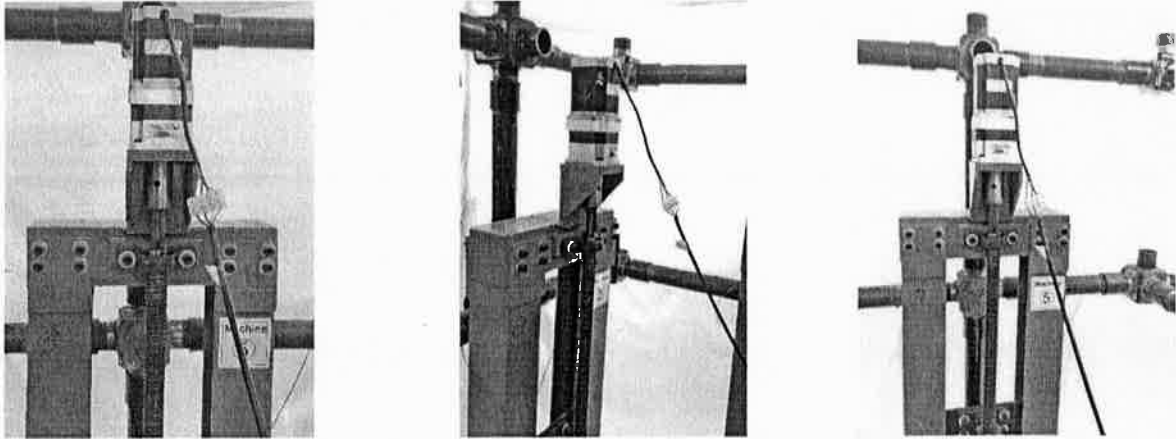


Figure 2: Structural frame assembly comprising of beams and columns made of steel pipe sections

### **Documentation**

The documentation in English should contain, use and maintenance manual, electrical system diagrams, drawings of the main items, foundation drawings, spare parts list.

### **INSTALLATION:**

The vendor should install the equipments on site at their cost. Installation, testing and commissioning have to be done in the presence of technical persons from IIT Madras.

### **WARRANTY**

The warranty should be for minimum Twelve (12) months from the date of the acceptance test of the equipment. It includes all the cost of repair or replacement of the eventual faulty parts.

### **GUIDELINES**

- Maintenance contract should be included for a period of 3 years.
- All the parts used should be non-corrosive and should come with a minimum on-site warranty of 1 year.
- All taxes should be mentioned clearly and included in the quotation. IIT Madras is eligible for concessional GST of 5% for research purposes
- Clarifications should be raised before the submission of the sealed envelope